

CLAIMS

1. An isolated polynucleotide being selected from the group consisting of:
  - a) a polynucleotide encoding a receptor tyrosine kinase MerTK polypeptide comprising an amino acid sequence selected from the group consisting of:
    - i) amino acid sequences which are at least about 98% identical to the amino acid sequence shown in SEQ ID NO: 2; and
    - ii) the amino acid sequence shown in SEQ ID NO: 2.
  - b) a polynucleotide comprising the sequence of SEQ ID NO: 1 or 3;
  - c) a polynucleotide which hybridizes under stringent conditions to a polynucleotide specified in (a) and (b) and encodes a receptor tyrosine kinase MerTK polypeptide;
  - d) a polynucleotide the sequence of which deviates from the polynucleotide sequences specified in (a) to (c) due to the degeneration of the genetic code and encodes a receptor tyrosine kinase MerTK polypeptide; and
  - e) a polynucleotide which represents a fragment, derivative or allelic variation of a polynucleotide sequence specified in (a) to (d) and encodes a receptor tyrosine kinase MerTK polypeptide.
2. An expression vector containing any polynucleotide of claim 1.
3. A host cell containing the expression vector of claim 2.
4. A substantially purified receptor tyrosine kinase MerTK polypeptide encoded by a polynucleotide of claim 1.
5. A method for producing a receptor tyrosine kinase MerTK polypeptide, wherein the method comprises the following steps:

- 124 -

- a) culturing the host cell of claim 3 under conditions suitable for the expression of the receptor tyrosine kinase MerTK polypeptide; and
- b) recovering the receptor tyrosine kinase MerTK polypeptide from the host cell culture.

5

6. A method for detection of a polynucleotide encoding a receptor tyrosine kinase MerTK polypeptide in a biological sample comprising the following steps:

- a) hybridizing any polynucleotide of claim 1 to a nucleic acid material of a biological sample, thereby forming a hybridization complex; and
- b) detecting said hybridization complex:

10

7. The method of claim 6, wherein before hybridization, the nucleic acid material of the biological sample is amplified.

15

8. A method for the detection of a polynucleotide of claim 1 or a receptor tyrosine kinase MerTK polypeptide of claim 4 comprising the steps of:

- a) contacting a biological sample with a reagent which specifically interacts with the polynucleotide or the receptor tyrosine kinase MerTK polypeptide and
- b) detecting the interaction.

20

9. A diagnostic kit for conducting the method of any one of claims 6 to 8.

- 25 10. A method of screening for agents which decrease the activity of a receptor tyrosine kinase MerTK, comprising the steps of:

- a) contacting a test compound with any receptor tyrosine kinase MerTK polypeptide encoded by any polynucleotide of claim 1;
- b) detecting binding of the test compound to the receptor tyrosine kinase MerTK polypeptide, wherein a test compound which binds to the

30

- 125 -

polypeptide is identified as a potential therapeutic agent for decreasing the activity of a receptor tyrosine kinase MerTK.

11. A method of screening for agents which regulate the activity of a receptor tyrosine kinase MerTK, comprising the steps of:
- 5
- a) contacting a test compound with a receptor tyrosine kinase MerTK polypeptide encoded by any polynucleotide of claim 1; and
- b) detecting a receptor tyrosine kinase MerTK activity of the polypeptide, wherein a test compound which increases the receptor tyrosine kinase MerTK activity is identified as a potential therapeutic agent for increasing the activity of the receptor tyrosine kinase MerTK, and wherein a test compound which decreases the receptor tyrosine kinase MerTK activity of the polypeptide is identified as a potential therapeutic agent for decreasing the activity of the receptor tyrosine kinase MerTK.
- 10
12. A method of screening for agents which decrease the activity of a receptor tyrosine kinase MerTK, comprising the steps of:
- a) contacting a test compound with any polynucleotide of claim 1; and
- 20 b) detecting binding of the test compound to the polynucleotide, wherein a test compound which binds to the polynucleotide is identified as a potential therapeutic agent for decreasing the activity of receptor tyrosine kinase MerTK.
13. A method of reducing the activity of receptor tyrosine kinase MerTK, comprising the step of contacting a cell with a reagent which specifically binds to any polynucleotide of claim 1 or any receptor tyrosine kinase MerTK polypeptide of claim 4, whereby the activity of receptor tyrosine kinase MerTK is reduced.
- 25
- 30

- 126 -

14. A reagent that modulates the activity of a receptor tyrosine kinase MerTK polypeptide or a polynucleotide wherein said reagent is identified by the method of any of the claim 10 to 12.
- 5 15. A pharmaceutical composition, comprising the expression vector of claim 2 or the reagent of claim 14 and a pharmaceutically acceptable carrier.
16. Use of the expression vector of claim 2 or the reagent of claim 14 in the preparation of a medicament for modulating the activity of a receptor tyrosine  
10 kinase MerTK in a disease.
17. Use of claim 16 wherein the disease is a gastrointestinal or liver disorder, cancer, a metabolic disorder (particularly diabetes), a neurological disorder, a cardiovascular disorder (particularly coronary heart disease), a hematological  
15 disorder, a reproductive disorder, an endocrine or hormonal disorder, a respiratory disorder (particularly COPD) or a genitourinary disorder.